Announcement

OF THE

Montana State School of Mines

1900-1901

Butte, Montana, August, 1900

ANNOUNCEMENT

OF THE

MONTANA
STATE SCHOOL OF MINES

—H—

1900-1901

—H—

BUTTE, MONTANA, AUGUST, 1900

Calendar for 1900-1901.

September 11—First term begins.
November 29—Thanksgiving Holiday.
December 22—Holiday Recess to January 7.
January 24—Term Examinations Begin.
January 26—End of First Term.
January 29—Second Term Begins.
February 12—Lincoln's Birthday—Holiday.
February 22—Washington's Birthday—Holiday.
May 30—Memorial Day—Holiday.
June 6—Term Examinations Begin.
June 7—Second Term Ends.
June 11—Summer Excursion for Surveying Begins.
July 23—Summer Excursion Ends.

MONTANA STATE SCHOOL OF MINES.

Board of Control.

All the State educational institutions of Montana are under the control of a State Board of Education. In general this control is exercised as in the case of the School of Mines through the medium of a local Board of Trustees, appointed by and responsible to the State Board of Education, which reserves to itself the right to confirm, or negative the acts of the Trustees. The State Board of Education is composed of the Governor of the State, the Attorney-General and the Superintendent of Public Instruction, who are ex-officio members of the Board, and of eight other members who are appointed by the Governor and confirmed by the Senate.

The following is a list of the members of these Boards:

BOARD OF EDUCATION.

ROBERT B. SMITH,
Governor of State and Ex-Officio President of the Board.

E. A. CARLETON,
State Superintendent and Secretary of the Board.

C. B. NOLAN,
Attorney-General, Ex-Officio Member of the Board.

N. W. McCONNELL, Helena.

O. F. GODDARD, Billings.

O. P. CHISHOLM, Bozeman.

HENRY R. MELTON, Dillon.

J. M. HAMILTON, Missoula.

M. J. GARRETT, Helena.

J. G. McKAY, Hamilton.

J. P. HENDRICKS, Butte.

BOARD OF TRUSTEES.

JOHN E. RICKARDS, Butte, President of the Board.

GEO. E. MOULTHROP, Butte, Secretary.

JAMES W. FORBIS, Butte, Treasurer.

JOSEPH V. LONG, Butte.

W. Y. PEMBERTON, Butte.

FACULTY.

NATHAN R. LEONARD, A. M., Acting President and Professor of Mathematics.

WILLIAM G. KING, A. M., Professor of Chemistry and Metallurgy.

ALEXANDER N. WINCHELL, Ph. D., Professor of Geology, Mining and Mineralogy.

CHARLES H. BOWMAN, M. S., Professor of Mechanics and Mining Engineering.

HAROLD S. BOARDMAN, C. E., Instructor in Draughting and Mining Engineering.

CONDITIONS OF ADMISSION.

The School of Mines will be opened for the reception of pupils on Tuesday, September 11th, 1900. Applicants for admission to the Freshman Class will be expected to sustain a satisfactory examination in Arithmetic, Higher Algebra to Quadratics, Plane Geometry, Geography, Elementary Zoology, Elementary Astronomy or Physical Geography and English Composition.

Candidates for advanced standing will be examined in all the studies of their course preceding those of the class they desire to enter. Credit will be given for work done in other reputable institutions, but the faculty reserves the right, at its discretion, to examine the applicant, notwithstanding these credits.

Persons of mature years and practical experience in Mining or Metallurgy, who are not candidates for a degree, may be admitted without examination to any of the studies of the course, that they may be able to pursue with profit to themselves and without embarrassment to the class.

Graduates from the following list of accepted High Schools of the State will be admitted without examination on presentation of their diplomas.

List of Accepted High Schools:

BUTTE.
HELENA.
GREAT FALLS.
BOZEMAN.
DILLON.
MISSOULA.
ANACONDA.
KALISPELL.
MILES CITY.

Tuition and Expenses:

By the Act establishing the School of Mines, no charge for tuition is to be made where the student is a bona fide resident of Montana, and this provision has been construed to mean that there shall be no charge for chemicals or materials necessarily used in the regular work of the classes. All breakage, however, or injury or destruction of apparatus must be paid for by the party through whom the injury is done.

The charge for tuition for students from other states will be Twenty-five ($25.00) Dollars per term, or Fifty ($50.00) Dollars per year, and the same liability for damage or breakage of apparatus, as in the case of students residing in Montana. There are no dormitories connected with the School of Mines. It is believed, however, that there will be no difficulty in securing good board in private families and on terms as reasonable as in other Western cities of the size of Butte.

Courses of Study and Degrees.

The course of instruction adopted for the School of Mines allows an election in the Junior and Senior years between certain studies, and for convenience these different lines of study are called respectively, The Course in Mining Engineering and The Course in Electrical Engineering. Those who complete the first of these will be entitled to the degree of Mining Engineer (M. E.); those completing the second, to the degree of Electrical Engineer (E. E.). The pages following give these courses in tabular form; the figures following each topic represent the number of hours per week given to class-room or laboratory work in that topic.

COURSE IN MINING ENGINEERING.

Freshman Year.

First Term.

Higher Algebra	5
Geometry	4
General Chemistry	8
Drawing	15

Second Term.

Higher Algebra	5 for 10 weeks
Surveying	5 for 10 weeks
Trigonometry	4
Descriptive Geometry	4
Drawing	6
Qualitative Analysis	9

Six Weeks' Vacation Work in Surveying.

Sophomore Year.

First Term.

Analytical Geometry	5
Mineralogy	7
Physics	5
Quantitative Analysis—Laboratory	9
Mechanical Drawing	4

Second Term.

Differential Calculus	5
Mineralogy	7
Physics	7
Quantitative Analysis	9
Drawing	3

Junior Year.

First Term.

Integral Calculus	5
Geology	5
Mechanics	2
Metallurgy—Lectures and Recitation	3
Machine Design and Drawing, half term	9
Assaying, half term	9

Second Term.

Economic Geology	5
Metallurgy—Lecture	3
Metallurgy—Laboratory	9
Graphics	5
Mining Surveying	2
Mechanics	5

Vacation, Six Weeks' Mining Surveying.

Senior Year.

First Term.

Metallurgy	4
Petrography	7
Mining	5
Hydraulics	5
Mining and Metallurgic Design	6
Testing Laboratory	3

Second Term.

Metallurgy—Lecture and Excursions	5
Mining—Lecture and Excursions	5
Power Transmission	3
Steam Engine	3
Petrography	3
Mining Law—Lecture	1
Micro-Chemical Analysis	1
Thesis	9

COURSE IN ELECTRICAL ENGINEERING.

(The Freshman and Sophomore Years are the same as those of the Mining Engineering Course.)

Junior Year.

First Term.

Integral Calculus	5
Dynamo Machinery	3
Laboratory, half term	9
Mechanics	2
Machine Design and Drawing, half term	9
Electrical Measurements—Laboratory	9

Second Term.

Economic Geology	5
Dynamo Machinery	3
Electrical Design	3
Electrical Measurements—Lecture	1
Electrical Measurements—Laboratory	9
Electrical Engineering	2
Shop Work	6

Senior Year.

First Term.

Hydraulics	5
Transformers and Alternating Currents	3
Dynamos—Laboratory	3
Electrical Design and Shop Work	6
Photometry and Electric Lighting	5

Second Term.

Power Transmission	5
Steam-Engine	3
Electrical Design and Shop Work	6
Electricity in Mining—Lecture	1
Mining Law—Lecture	1
Thesis	12

The figures following the topics in these courses indicate the number of hours per week given to each.

DEPARTMENTS.

COURSE IN MATHEMATICS.

The course in Mathematics extends through the first three years. Half the time of the Freshman year is given to this study because of its importance as a preparation for most of the remaining studies of the Engineering course.

ALGEBRA.—The study of Algebra will begin with quadratics in the Higher Algebra, and will continue for 30 weeks—five recitations per week.

SOLID GEOMETRY—Will also be begun at the commencement of the Freshman year and be completed by the end of the first term.

TRIGONOMETRY—Plain and Spherical will be taken up at the beginning of the second term of the Freshman year, and extended through that term. Wentworth's text-books will be used through the Freshman year.

ANALYTICAL GEOMETRY—Will be commenced the first term of the Sophomore year. The different systems of coordinates, the properties of the conic sections and higher plane curves, and the relation of lines and surfaces in space, will be carefully examined with particular reference to the practical applications of the knowledge thus acquired to the pursuits of the engineer.

THE DIFFERENTIAL AND INTEGRAL CALCULUS—Will occupy the last half of the Sophomore and the first half of the Junior year. The instruction will mainly be given by lecture, with Taylor's and Byerly's Treatises as works of reference.

GENERAL CHEMISTRY.

A course in general chemistry extends through the first half of the Freshman year. It consists of experimental work by each student at his desk covering the subject of inorganic chemistry, including the metals. He is taught the manipulation of apparatus, the characteristics of the various acids, bases and salts, and their reactions upon each other. This work is the foundation upon which his general knowledge of chemistry is based and he is required to keep accurate notes, recording the reactions and principles involved in each experiment. Recitations are held covering the theoretical part of the work gone over.

This laboratory work is supplemented by a course of two lectures a week extending through the first term, the student being required to take such notes as will enable him to explain in the class-room the principles involved and illustrated on the lecture table. The student will be required to read various standard works on general chemistry.

QUALITATIVE ANALYSIS.

The second half of the Freshman year is devoted to qualitative analysis. The student studies the general schemes of analysis by which the various metals are separated from each other, then the acid radicals are detected and separated. The course covers the separation of metals in solution, dry salts, alloys and minerals in the wet way. The student must become conversant with all reactions involved and the writing and balancing of chemical equations. The spectroscope is used in connection with qualitative work for the detection of the fixed alkalies and the alkaline earths.

This course is supplemented by lectures covering the entire course of work and recitations each week.

QUANTITATIVE ANALYSIS.

Quantitative analysis extends through the whole of the Sophomore year. The work embraces all the work as carried on in the laboratories of the smelters, mills and mining plants. The various products of the smelters, such as crude ores, calcines, slags, mattes, flue dust, etc., are analyzed completely. The student after being taught the technical methods of analysis will be required to practice rapid methods and the performing of a large number of determinations in one afternoon as required in actual smelter and mill work.

The course covers thoroughly the whole subject of mineral analysis, including gravimetric, volumetric and colormetric methods, the analysis and calorific power of coals, the analysis of gases of combustion and illuminating gas, the standardization of solutions in acidimetry and alkalimetry, the standardization of cyanide solutions and the determination of gold and silver in cyanide solutions, the specific gravity of solids and solutions by means of the balance and the hydrometer. Stoichiometry is thoroughly taught in the recitation-room and problems in chemistry solved. Various novel and special analysis worked and illustrated at the lecture table. Quizzes upon various methods of analysis will be introduced and recent literature upon chemical problems discussed.

The chemical laboratories are generously equipped with all modern appliances and conveniences and every opportunity offered for rapid and accurate work. The student will have at his desk water, sink, gas, blast, and exhaust and the extent of the practical work will be limited only according to his abilities and industry.

METALLURGY.

The subject of metallurgy begins with a thorough course in assaying during the latter part of the first term of

the Junior year. It includes fire assays of gold, silver and lead in crude ores, smelter products, such as slags, mattes, copper and lead bullion, etc.

The laboratory is fitted with the most modern apparatus. Gas muffle and melting furnaces will be used. The retorting of amalgam, melting and refining of gold and silver bullion and sampling and assaying of pig copper and lead. Every convenience known at the present time will be at the command of the student and the most modern and reliable balances used in assay work.

A course will be given in the metallurgy and refining of copper and the recovery and purification of the bi-products of gold and silver from the copper bullion. Various excursions to the smelters and reduction plants of Butte and Anaconda will be undertaken as the special subjects come before the student where are practically illustrated all the various methods of treatment. With these processes of treatment at our very doors, the opportunity of seeing the operations at work will be surpassed by no single locality in the world. The operations of treatment from high and low grade ores as taken from the mines, to the refined products, can each be followed accurately and by nearly all of the various methods of treatment. No two smelters of Butte are identical in operation.

The metallurgy of lead will be thoroughly treated by recitations, lectures and visits to the lead smelters of Montana. Also the metallurgy of iron, nickel, cobalt, zinc, aluminum, etc., and wherever practicable, excursions will be undertaken to see practical workings of these processes.

The various methods for the most advantageous treatment and extraction of the precious and useful metals from their various ores will be demonstrated by the student and checks made upon his work by means of analyses and assays. The comparative merits of the cyanide, amalgamation, hyposulphite, chlorination and other methods of treatment upon a given ore will be compared and determined.

Excursions will include the cyanide and other mill plants and notes and reports required concerning the details of these various processes examined.

Courses in Mineralogy.

First Term of Sophomore Year.

Crystallography—The course embraces a brief study of crystal structure, of the general principles of crystallography, and of the various forms of each crystal system. By the constant use of models and natural crystals the student is expected to become familiar with the common forms.

Second Term of Sophomore Year.

Descriptive Mineralogy—The course treats of the physical and chemical properties of minerals, their occurrence and association. The object of the course is to enable the student to recognize by a few simple tests the commoner minerals. Text-book, Dana's Text-book of Mineralogy.

Laboratory Work During Sophomore Year.

Blow-pipe Analysis—The course is intended to familiarize the student with the simple reactions of the elements before the blow-pipe. Text-book, Brush and Penfield's Determinative Mineralogy and Blow-pipe Analysis.

Petrography.—This course is intended to acquaint the student with the modern methods of microscopic examination and determination of minerals and rocks. The course is divided into two parts: I. Optical Mineralogy. II. Petrography Proper.

First Term of Senior Year.

I. Optical Mineralogy—The lectures and laboratory work cover the following subjects:

A. Apparatus.

1. Simple Microscope or Lens.
2. Compound Microscope.

Accessory Apparatus.

1. Rock Cutting Machine.
2. Rock Grinding Machine.
3. Slide and Cover Glass.
4. Camera Lucida.
5. Bertrand Lenses.
6. Quartz Wedge.
7. Mica Plate.
8. Gypsum Plate.

B. Preparation of Thin Sections.

1. Use of Rock Cutting and Grinding Machines.
2. Thinness of Sections.

C. Light.

1. Propagation of Light.
2. Refraction; single, double; indices of Refraction; Polarized Light.

D. Determination of Minerals.

1. Crystal Form.
2. Crystalline Texture.
3. Cleavages and Parting.
4. Specific Gravity; Heavy Solutions, Westphal Balance.
5. Optical Characters (Color in common lights, color in polarized light, relative refringence, optic axes, axes of elasticity).

6. Uniaxial..... { .....Negative. / .....Positive.

7. Biaxial..... { .....Negative. / .....Positive.

8. Relative Bi-refringence.

9. Extinction in Parallel Polarized Light.

   a. Constant..... { Amorphous. / Isometric.

   b. Parallel..... { Tetragonal. / Hexagonal. / Orthorhombic.

   c. Oblique..... { Monoclinic. / Triclinic.

10. Interference Figures (Converged Polarized Light.

    a. Uniaxial Images.... { Positive. / Negative.

    b. Biaxial Images..... { Negative. / Positive.

11. Dispersion.

II. Petrography Proper.

Second Term of Senior Year.

1. Igneous Rocks.

   1. Principles of Classification.
   2. Classification of Kemp, based on:
      a. Texture.
      b. Mineralogical Composition.
      c. Chemical Composition.

   3. Determination of Igneous Rocks.

      a. Texture—(*aa.* Glassy; *bb.* Felsitic or Porphyritic; or *cc.* Granitoid).
      b. Mineralogical Composition.
      c. Chemical Composition.

2. Sedimentary Rocks (with Rocks deposited from Solution and Eolian Rocks).

1. Breccias and Mechanical Sediments, not Limestone.
2. Limestones.
3. Organic Remains, not Limestones.
4. Precipitates from Solution.

3. Metamorphic Rocks.

1. Weathering.
   a. Gneisses, Syenytic, Diorytic, Gabbroic, etc.
   b. Crystalline Schists, Mica-Schists, Hornblende-Schists, Chloritic-Schists, Talc-Schists, etc.
   c. Quartzytes and Slates.
   d. Crystalline Limestones and Dolomytes.
   e. Ophicalcites, Serpentines and Soapstones.
2. Contact Metamorphism { Endomorphism. Exomorphism.
3. Regional Metamorphism.

Text-books, Harker's Petrology for Students, Kemp's Handbook of Rocks.

Second Term of Senior Year.

Micro-Chemical Analysis—The course is chiefly laboratory work and consists of a study of the methods of determination of the various elements by chemical reactions upon microscopic quantities under the microscope. Text-book, Behren's Manual of Micro-Chemical Analysis.

Courses in Geology.

First Half of First Term of Junior Year.

Physical Geology—This course treats of the origin and alteration of rocks, of general volcanic and earthquake action, metamorphism, jointing, faulting, mountain building, action of air, the surface and underground waters, and life, the interior condition of the earth, etc., especially in their relations to the problems that the mining engineer, economic geologist and quarryman have to meet. Text-book, Scott's Introduction to Geology.

Second Half of First Term of Junior Year.

Historical Geology—The Instruction in this subject will consist of lectures and recitations. The main object of the course is to familiarize the student with the life history of the earth, and with the mode of formation, order of superposition, times of upheaval, distribution in time and space, and characteristic fossils of the formations which compose the earth's crust. Text-book, Scott's Introduction to Geology.

Second Term of Junior Year.

Economic Geology—In this course the uses and commercial value of rocks and ores are especially emphasized. The course includes a study of common rock and vein forming minerals, origin of ore deposits, classification of ore deposits, study of deposits of iron, copper, gold, silver, lead, zinc, etc., and of coal, petroleum, etc. The course also includes a study of building stones, cements, soils, clays, fertilizers, artesian wells, salt, abrasive materials, precious stones, etc. Text-books, Kemp's Ore Deposits of the United States, and Tarr's Economic Geology.

Course in Mining.

This course, running through the Senior year, treats of the occurrence of ores, prospecting, exploration and exploitation of mines and placers with excursions to various mining camps and practical work underground.

EQUIPMENT.

The Department of Geology, Mining and Mineralogy occupies three rooms on the second floor. The department receives the leading geological journals, and is building up a library of the most important works on geology, mining and mineralogy. The department is equipped with the latest "Grand Model" Nachet Microscope with all the accessories, and Student model microscope, prepared thin sections of typical American and foreign rocks, a rock cutting and grinding machine, complete apparatus and chemical reagents for blow-pipe analysis, crystal models, geological models and several series of rocks, minerals and fossils.

The museum, which occupies a large room on the first floor, will contain models of mines, an exhibit of gold specimens, and general collections of rocks and minerals.

Mechanics.

Physics—The subject of mechanics begins in the Sophomore year with a course in general physics. During the first term the student will acquire an analytical knowledge of the mechanics of solids and liquids. The subjects of heat and light will be introduced giving prominence to their practical aspects. Aside from the nature and measurement

of heat, its application to the steam-engine and the transmission of energy by means of compressed air will be considered. The work in light will include a study of optical and engineering instruments and of the phenomena presented in the study of mineralogy.

The second term will be occupied with a study of electricity and magnetism. This course will include a study of the principles underlying the application of electricity to engineering problems, as haulage, the transmission of energy, lighting, etc. During this term the class work of the year will be supplemented by practice in the laboratory. Constants in the domain of mechanics, heat and light will be determined and familiarity with simple electrical measurements will be acquired.

Analytical and Applied Mechanics—These subjects are introduced in the Sophomore year in connection with drawing. The mechanism of machinery, mechanical movements and the modes of communicating motion will be studied.

During the Junior year the analytical and applied mechanics will have application to the proportioning of materials in engineering and mechanical structures. Many problems will be solved during this course and applied in the machine designing which follows throughout the same year.

Hydraulics—The course in hydraulics includes a study of problems connected with the storing and conveying of water, the structure of dams, water-wheels, etc.

MINING ENGINEERING.

The object of this course is to acquaint the student with the modern methods employed in mining operations, with special attention to the Rocky Mountain districts. The school depends largely upon the courtesies of the mining companies of the immediate locality in affording the working illustrations. Some of the most extensive mining

plants now in existence are located here. The students are permitted and required to make personal investigations in these mines and report on various topics assigned to them by the professor.

Courses of lectures will be given including the subjects of tunneling, driving shafts, drifts, stopes, the methods of mining, timbering, the use of explosives, ventilating, etc. Also a course will be given on mining machinery, including haulage, hoists, pumps, boring and drilling machinery, coal cutting machinery, etc.

Mining Laws—A course in mining law will be given during the Senior year.

Drawing—The first and second years in drawing will be occupied with the use of instruments, elementary projections, descriptive geometry, working and isometric drawing of machinery, furnaces, and structural work, tracing and blue printing. The drawing required during the remainder of the course will be connected with allied subjects as machine designs, mine surveying. Topographical and geological maps will be constructed during the course.

Surveying—Field practice in surveying occupies six weeks in both the first and third summer vacations, during which time the student gives his whole time to the subject. There will be practice in the use and adjustment of instruments, land, mine, and geological surveying, leveling and triangulation. The course also includes practical work in drawing and map construction.

ELECTRICAL ENGINEERING.

The first two years of the electrical engineering course are identical with the first two years of the mining engineering course. During the Junior year the student pursues an extended course in the electrical laboratory. For this purpose an equipment has been provided consisting in part of galvanometers, resistance boxes, wheatstone bridges of various forms, condensers, induction coils, electro-dynam-

ometers, ammeters, voltmeters, keys, switches, etc. A storage battery is furnished for use in this department. The student also makes a study of the telegraph and telephone systems and the elementary theory of the dynamo.

The electrotechnical work of the Senior year consists of designing, the theory of alternating currents, electric lighting and photometric work, power transmission and electrical testing in the dynamo laboratory.

The dynamo laboratory has been equipped with a twelve-horse-power gas-engine running a line shaft for which are belted, direct and alternating current dynamos. Motors, transformers and the requisite measuring instruments are also provided. The shop is at present provided with a complete line of bench tools, a thirteen-inch lathe, and emery wheels. Shafting and room are provided for extending the equipment of this department as soon as practicable.

The advantages of the electrical engineering department are offered to mining engineering students who wish to become proficient in this line of work in connection with the regular mining course, the work chosen being subject to the approval of the faculty.

EQUIPMENT OF THE SCHOOL OF MINES.

The Legislature of the State at its last session made an appropriation of $15,000 for the equipment of the School of Mines with suitable furniture and apparatus. This sum has been judiciously expended under the direction of the Board of Trustees, and it is believed that by the date set for the opening of the school, this work will have been completed and the institution will then be found in possession of a very extensive and valuable collection of apparatus, machinery, models and illustrative material.

LOCATION.

The State of Montana has been particularly fortunate in the location of the School of Mines. In the language of the authorities of one of the leading mining schools of this country: "It is an axiom of modern education that any school which is to obtain the greatest return for the money and energy spent in establishing it, must be situated in a region which shall from its very nature serve, free of all expense, as a part of the real equipment of that school." There is not in this country or in any other a place that offers for a School of Mines so many advantages of this character as the City of Butte. Here are to be found the richest, the most extensive, and, scientifically considered, the most interesting mines of this country, the most numerous, and varied smelting and reduction plants, and a very large and intelligent class of men whose lives are devoted to the various lines of labor and investigation in reference to all the phases of mining and the treatment of ores. Such a location and such an environment furnishes a stimulus and an encouragement to the student of mining that could not be found in mere class-room work, nor afforded by any equipment of models or apparatus, no matter how elaborate or expensive.

Full advantage will be taken of the opportunities offered by this location and the students will be given every facility to become acquainted by personal observation with the practical operations that are here carried on in every branch of mining.

ORGANIZATION OF THE SCHOOL OF MINES.

The foundation for the School of Mines was laid in the Enabling Act of Congress in pursuance of which the State of Montana was admitted into the Union. This Act provided for a donation of one hundred thousand acres of public lands "for the establishment and maintenance of a School of Mines." This gift was accepted on the part of the State, and a spacious building, 95 feet by 118, has been

erected just west of the City of Butte. This structure has often been spoken of as the most elegant and substantial public building in Montana. The ground on which it stands was donated for the purpose by citizens of the State. The building was erected in 1896-8, and is connected with the gas, water and electric lines and mains of the city. It is furnished with the best heating and ventilating plant that could be obtained and nothing has been omitted that would render it convenient for the purposes for which it was designed.

The citizens of Montana have shown in many ways their deep interest in this institution. When there was a delay in securing the proceeds of the bonds authorized by the State for the erection of the building, public spirited men promptly advanced the money needed for the purpose, so that the work might proceed. And during the present year some very substantial additions have been made by them to its equipment. Amongst these may be mentioned the loan of a magnificent collection of gold crystals by Charles W. Clark, Esq. A large and expensive set of glass models of the surface and underground workings of the Anaconda, Neversweat and Colusa Parrot mines, by the proprietors of the latter company. We expect soon to be able to add like models and maps of these same properties, by the generosity of the Anaconda Company, and corresponding maps and models of the Pennsylvania, the Johnstown and other mines, the gift of F. Augustus Heinze.

A few days ago Mr. Charles W. Clark authorized the Inter Mountain to announce that he would endow a professorship in the School of Mines.

The faculty and officers of the school, in view of all the facts set forth in this announcement, cherish the brightest hopes for the future of this institution. In offering its advantages to the young people of this State and of the Northwest, they proclaim their purpose to make it worthy of the great mining state whose name it bears, and the equal of any Mining School in the United States.